

Fig. 1

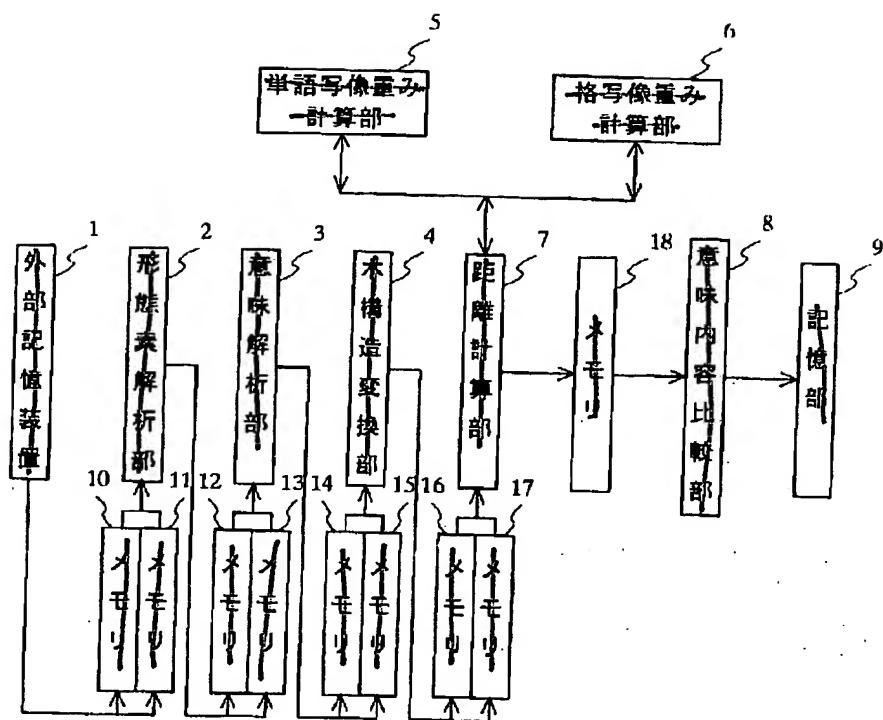


Fig. 2

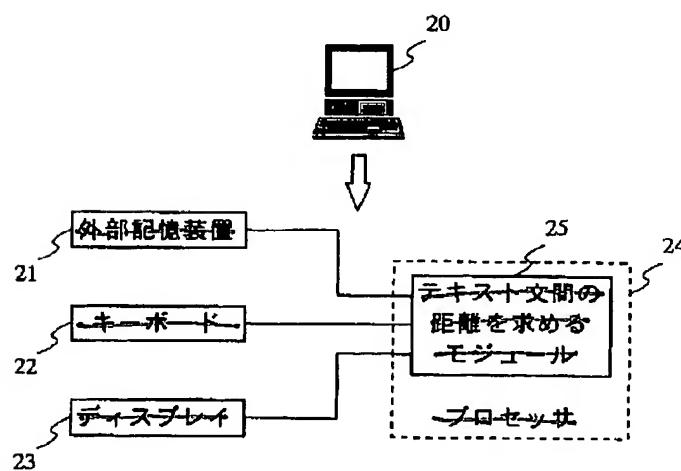


Fig. 1

1 external storage apparatus  
2 morphological analysis section  
3 semantic analysis section  
4 tree structure conversion section  
5 word-mapping-weight calculation section  
6 case-mapping-weight calculation section  
7 distance calculation section  
8 semantic content comparison section  
9 storage section  
10~18 memory

Fig. 2

21 external storage apparatus  
22 keyboard  
23 display  
24 processor unit  
25 module for obtaining distance between text sentences

Fig.3

A/DT teacher/NN teaches/VBZ English/NNP to/TO students/NNS

Where, DT indicates Determiner, NN indicates Noun(singular or mass),  
VBZ indicates Verb(3rd ps. sing. Present), NNP indicates Proper noun(singular),  
TO indicates to, and NNS indicates Noun(plural).

Fig. 3

先生	先生	センセイ	センセイ	名詞——般
は	は	ハ	ヲ	助詞——係助詞
生徒	生徒	セイト	セイト	名詞——般
に	に	ニ	ニ	助詞——格助詞——般
英語	英語	エイゴ	エイゴ	名詞——般
を	を	ヲ	ヲ	助詞——格助詞——般
教える	教える	オシエル	オシエル	動詞——自立 一段 基本形
FSS				

Fig. 4

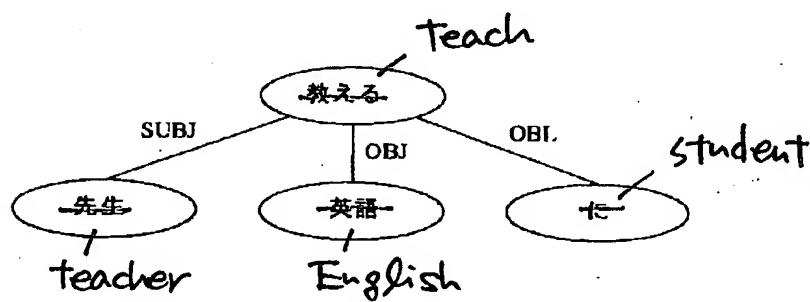


Fig. 5

case category

case category

distance value

格カテゴリ 1	格カテゴリ 1	距離値11
格カテゴリ 1	格カテゴリ 2	距離値12
...	...	
格カテゴリ 1	格カテゴリ m	距離値1m
...	...	
格カテゴリ m	格カテゴリ 1	距離値m1
格カテゴリ m	格カテゴリ 2	距離値m2
...	...	
格カテゴリ m	格カテゴリ m	距離値mm

Fig. 6A

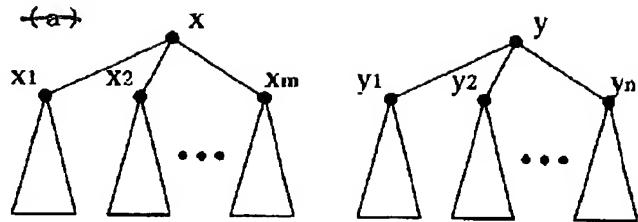


Fig. 6B

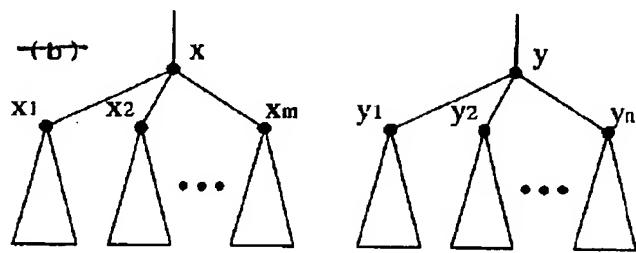


Fig. 6C

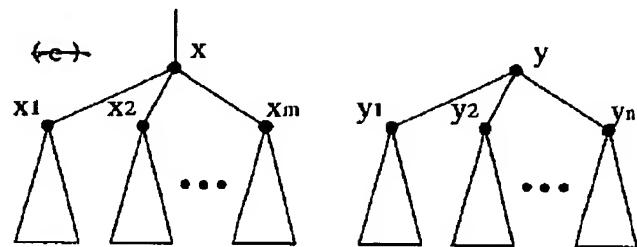


Fig. 6D

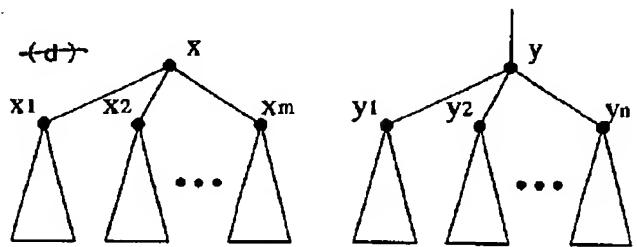


Fig. 7

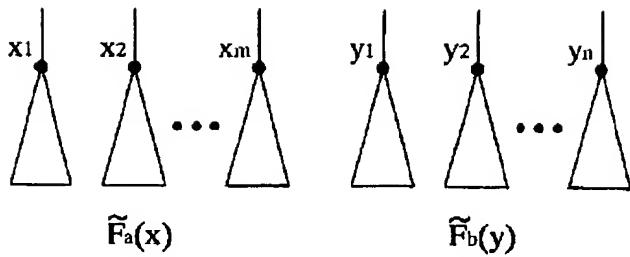


Fig. 8

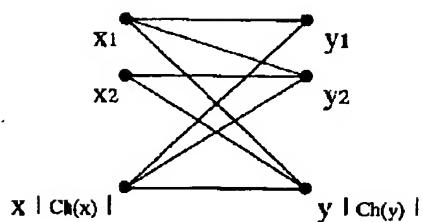


Fig. 9 A

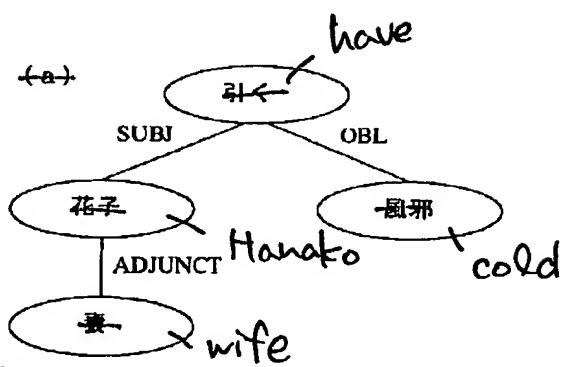


Fig. 9 B

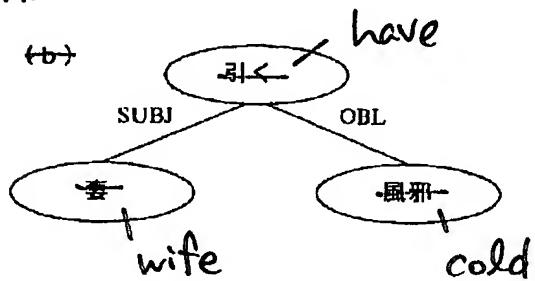


Fig. 10

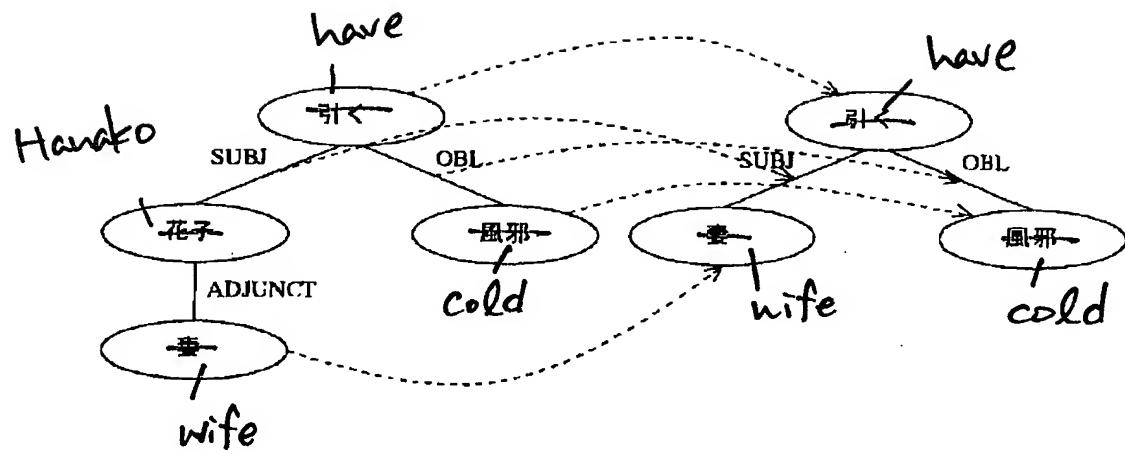


Fig. 11 A

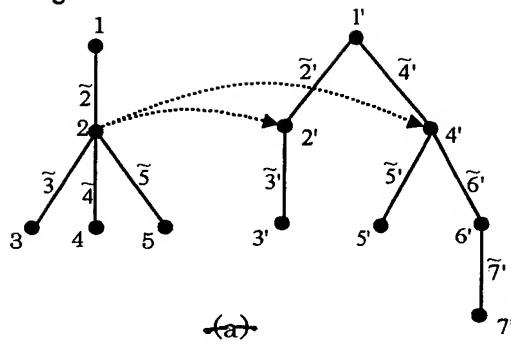


Fig. 11 C

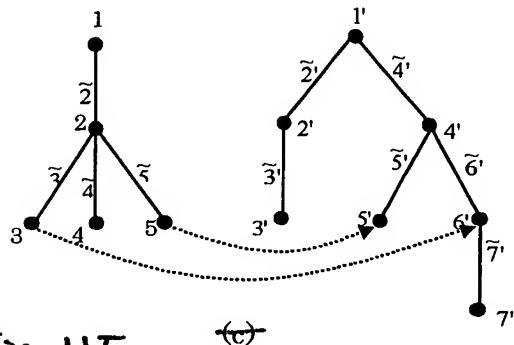


Fig. 11 E

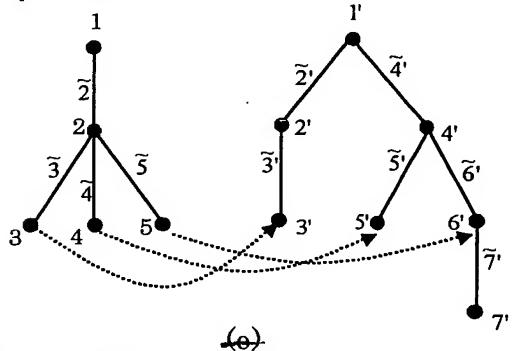


Fig. 11 G

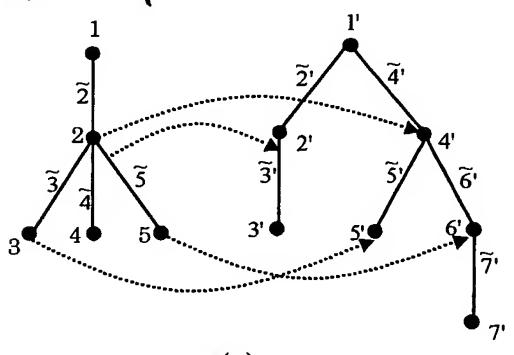


Fig. 11 B

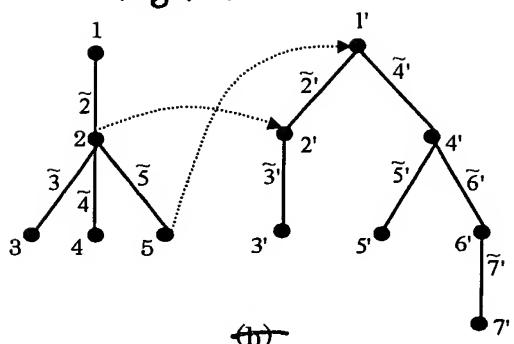


Fig. 11 D

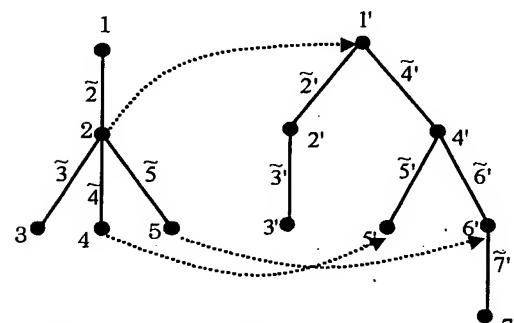


Fig. 11 F

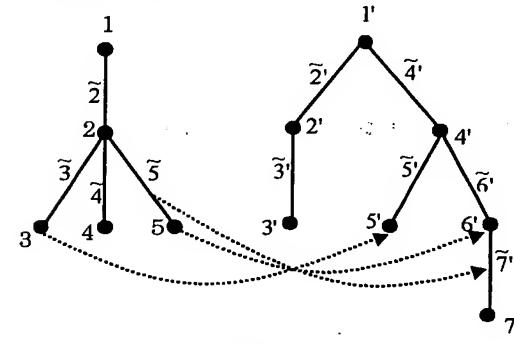


Fig. 11 H

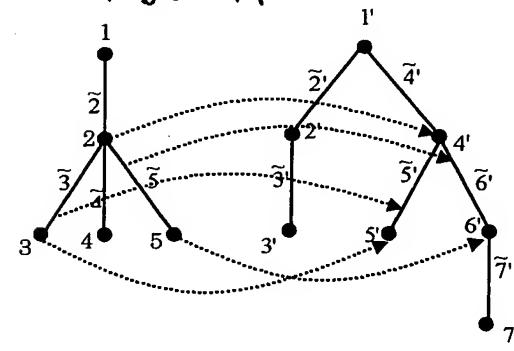


Fig. 12

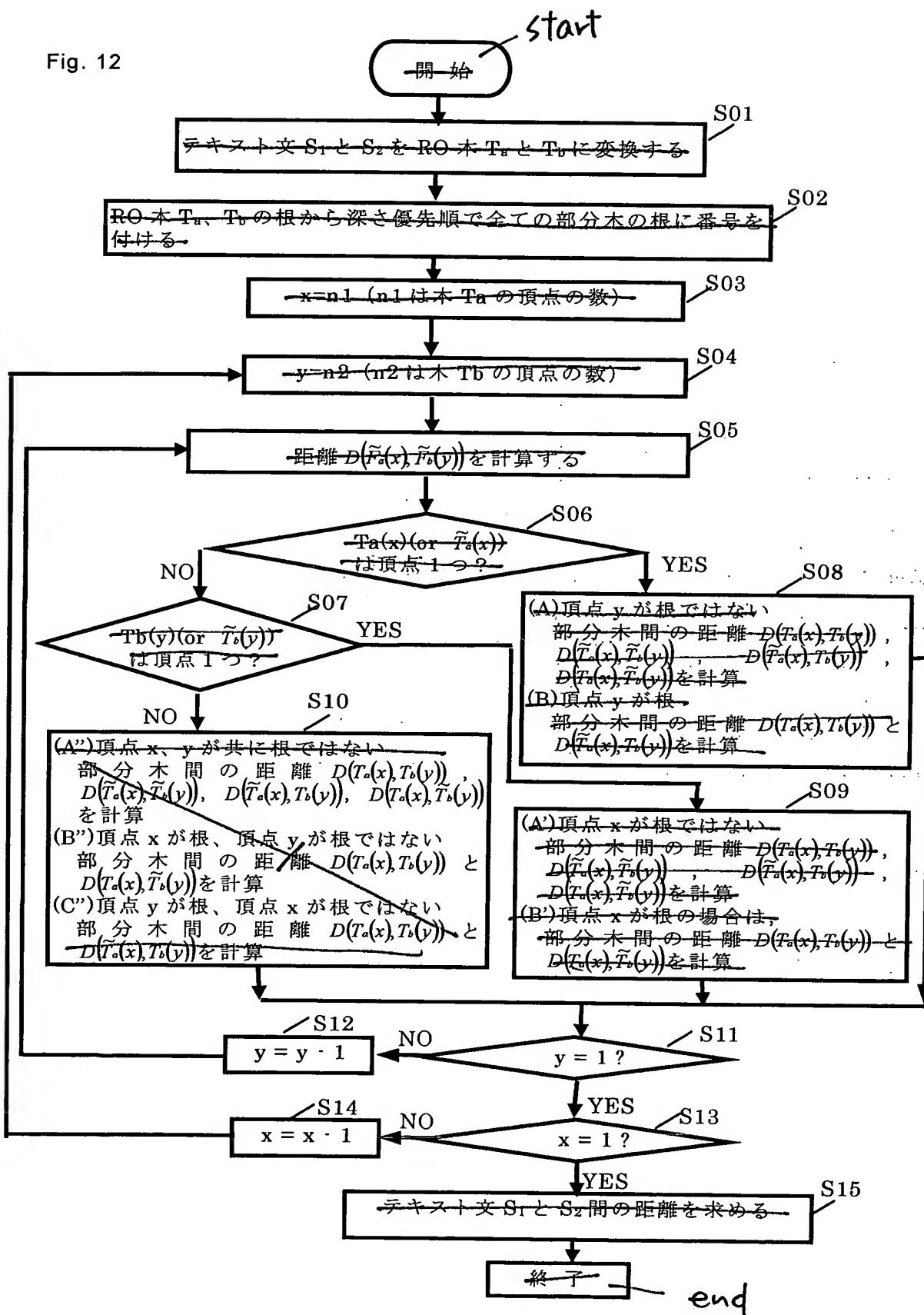


Fig. 12

S01 convert text sentences S1 and S2 into RO trees Ta and Tb  
S02 allotting numbers to roots of all subtrees of the RO trees  
Ta and Tb in depth first order from root of the RO tree  
S03  $x = n_1$  where  $n_1$  denotes number of vertexes in the tree  
Ta  
S04  $y = n_2$  where  $n_2$  denotes number of vertexes in the tree  
Tb  
S05 calculate a distance  $D(\tilde{F}_a(x), \tilde{F}_b(y))$   
S06 Does  $T_a(x)$  (or  $\tilde{T}_a(x)$ ) consist of one vertex?  
S07 Does  $T_b(y)$  (or  $\tilde{T}_b(y)$ ) consist of one vertex?  
S08 (A) vertex y is not root  
Calculate distances between subtrees  
 $D(T_a(x), T_b(y)), D(\tilde{T}_a(x), \tilde{T}_b(y)), D(\tilde{T}_a(x), T_b(y)),$  and  $D(T_a(x), \tilde{T}_b(y))$   
(B) vertex y is root  
calculate distances between subtrees  $D(T_a(x), T_b(y))$  and  
 $D(\tilde{T}_a(x), T_b(y))$   
S09 (A) vertex x is not root  
Calculate distances between subtrees  
 $D(T_a(x), T_b(y)), D(\tilde{T}_a(x), \tilde{T}_b(y)), D(\tilde{T}_a(x), T_b(y)),$  and  $D(T_a(x), \tilde{T}_b(y))$   
(B) vertex x is root  
Calculate distances between subtrees  $D(T_a(x), T_b(y))$  and  
 $D(T_a(x), \tilde{T}_b(y))$

S10 (A) vertexes x and y are not root

Calculate distances between subtrees

$D(T_a(x), T_b(y))$ ,  $D(\tilde{T}_a(x), \tilde{T}_b(y))$ ,  $D(\tilde{T}_a(x), T_b(y))$ , and  $D(T_a(x), \tilde{T}_b(y))$

(B) vertex x is root and vertex y is not root

Calculate distances subtrees  $D(T_a(x), T_b(y))$  and

$D(T_a(x), \tilde{T}_b(y))$

(C) vertex x is not root and vertex y is root

calculate distances between subtrees  $D(T_a(x), T_b(y))$  and

$D(\tilde{T}_a(x), T_b(y))$

S15 calculate distance between the text sentences S1 and S2

Fig. 13

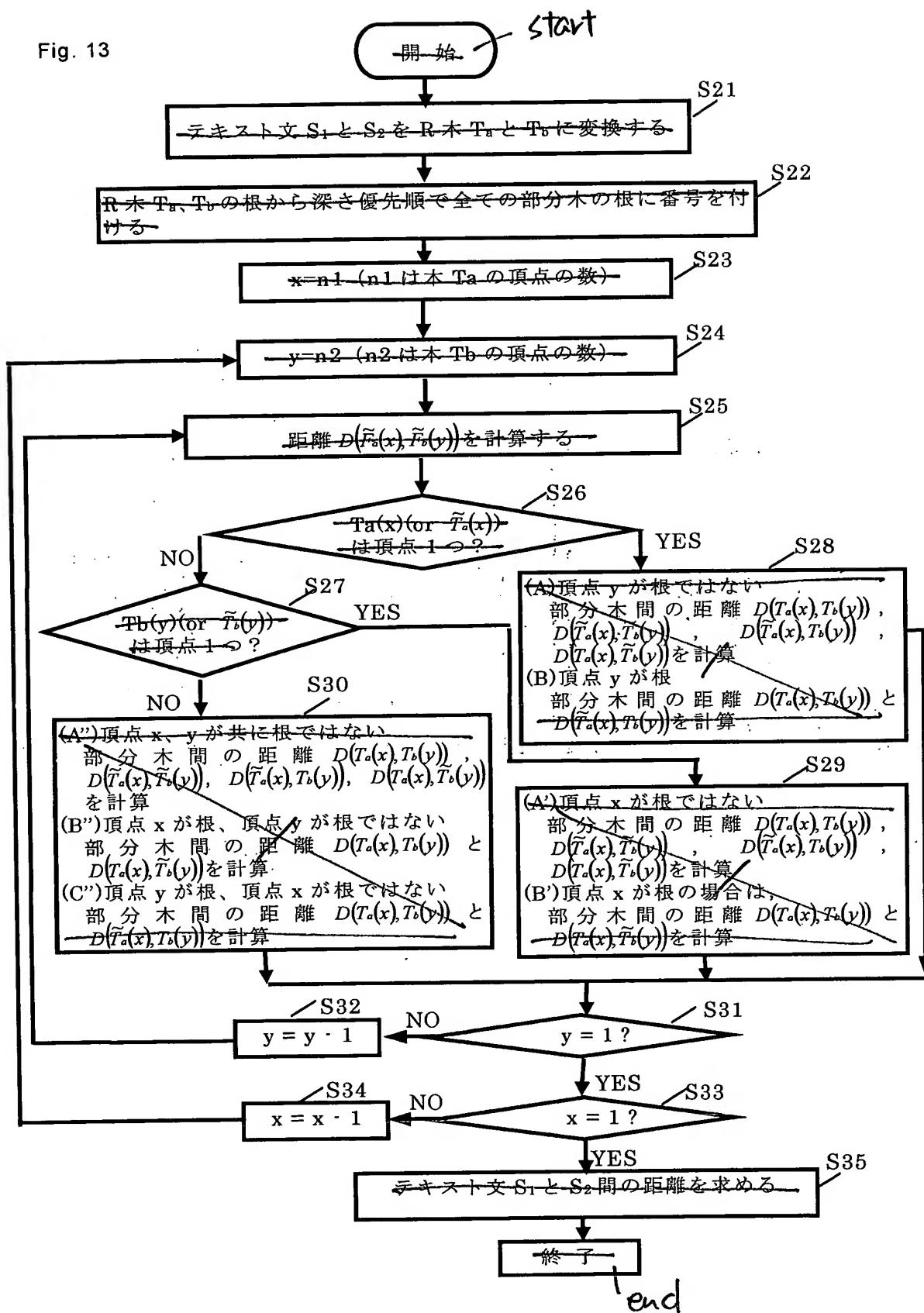


Fig. 13

S21 convert text sentences S1 and S2 into R trees Ta and Tb  
S22 allotting numbers to roots of all subtrees of the R trees  
Ta and Tb in depth first order from root of the R tree  
S23  $x = n_1$  where  $n_1$  denotes number of vertexes in the tree  
Ta  
S24  $y = n_2$  where  $n_2$  denotes number of vertexes in the tree  
Tb  
S25 calculate a distance  $D(\tilde{F}_a(x), \tilde{F}_b(y))$   
S26 Does  $T_a(x)$  (or  $\tilde{T}_a(x)$ ) consist of one vertex?  
S27 Does  $T_b(y)$  (or  $\tilde{T}_b(y)$ ) consist of one vertex?  
S28 (A) vertex y is not root  
Calculate distances between subtrees  
 $D(T_a(x), T_b(y))$ ,  $D(\tilde{T}_a(x), \tilde{T}_b(y))$ ,  $D(\tilde{T}_a(x), T_b(y))$ , and  $D(T_a(x), \tilde{T}_b(y))$   
(B) vertex y is root  
calculate distances between subtrees  $D(T_a(x), T_b(y))$  and  
 $D(\tilde{T}_a(x), T_b(y))$   
S29 (A) vertex x is not root  
Calculate distances subtrees  
 $D(T_a(x), T_b(y))$ ,  $D(\tilde{T}_a(x), \tilde{T}_b(y))$ ,  $D(\tilde{T}_a(x), T_b(y))$ , and  $D(T_a(x), \tilde{T}_b(y))$   
(B) vertex x is root  
Calculate distances subtrees  $D(T_a(x), T_b(y))$  and  
 $D(T_a(x), \tilde{T}_b(y))$

S30 (A) vertexes x and y are not root  
Calculate distances between subtrees  
 $D(T_a(x), T_b(y))$ ,  $D(\tilde{T}_a(x), \tilde{T}_b(y))$ ,  $D(\tilde{T}_a(x), T_b(y))$ , and  $D(T_a(x), \tilde{T}_b(y))$   
(B) vertex x is root and vertex y is not root  
Calculate distances subtrees  $D(T_a(x), T_b(y))$  and  
 $D(T_a(x), \tilde{T}_b(y))$   
(C) vertex x is not root and vertex y is root  
calculate distances between subtrees  $D(T_a(x), T_b(y))$  and  
 $D(\tilde{T}_a(x), T_b(y))$   
S35 calculate distance between the text sentences S1 and S2